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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/582,230	07/21/00	HIRAGA T	0670-248

MM91/0813

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EXAMINER	
CHANG, A	
ART UNIT	**PAPER NUMBER**
2872	

DATE MAILED: 08/13/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No.	Applicant(s)	
	09/582,230	HIRAGA ET AL.	
	Examin r	Art Unit	
	Audrey Y. Chang	2872	

-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-19 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-19 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Specification

1. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "holographic pattern for diffraction has curved pattern" as recited in claim 11 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "14" has been used to designate both "diffraction holographic pattern" and "non-diffraction holographic pattern". Correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 17-18 and 19 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The specification fails to teach as how could a plurality of imaginary laser light sources be formed by "forming diffraction hologram patterns on a hologram member by using light from optical elements (or emitted from pin holes as in claim 19)". The plurality of imaginary light sources simply can not be formed by forming a hologram using a light source. Claim 18 inherits the rejection. Clarifications are required.

The specification also fails to teach adequately what is a "non-diffraction hologram pattern" as recited in claim 17. An optical element that can be identified as a hologram is because that it has holographically recorded fringes that allow incident light to be diffracted. It is not clear how could a hologram being "non-diffraction" since if such is true it can not be identified as a "hologram".

With regard to claim 19, by using a collimator lens and pin holes a plurality of **real** light sources will be formed but not a plurality of imaginary light source be formed.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 2, 3, 11-13 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase "a longer direction of a far field pattern of said real laser light source" recited in claim 2 appears to be vague, confusing and indefinite since it is not clear what is considered as the pattern of the laser light source. Also it is not clear what is considered here as the "column direction of the hologram patterns" recited. It is not clear how does this column direction relate to the fringes pattern of the hologram.

The phrase "an intensity of diffraction light not sued for light spot formation is reduced and a reduced amount of light is used as diffraction light for light spot formation" recited in claim 3 appears to be vague and indefinite since it is not clear which light has the reduced intensity and the reduced amount.

The phrase "curved patterns" recited in claim 11 appears to be indefinite since it is not clear if such curved patterns is referred to the fringe lines or is referred to the physical shape of the holographic optical element. Clarification is required.

The phrase "the hologram pattern for diffraction" recited in claims 11, 12 and 13 appears to be vague and indefinite since it lacks proper antecedent basis from their respective base claims. It is noted that there are more than one hologram patterns for diffraction recited in their base claim and it is not clear which one is being cited here.

Claim 19 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: among the hologram member, the hologram patterns, the collimator lens and the pin hole member.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 1-3, 6-11 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Takeda et al (PN. 5,828,643).

Takeda et al teaches an optical pickup head apparatus that is comprised of a *single real laser light source* (11, Figures 1 or 15), a *holographic optical element* (12 or 22) serves as the hologram member for diffracting the light emitted from the light source and an *objective lens* (14) for focusing the light to form a plurality of light spots on a *laser disk* (15) serves as the recording medium, (please see Figures 1 and 15). Takeda et al teaches that the holographic optical element (12 or 22) has a plurality of diffraction grating patterns (12A, 12B or 22A, 22B, 22C) such that the light generated from the real light source is diffracted into diffraction orders such that the different diffraction order beams appeared to be generated

by a plurality of virtual light sources (A_+, A_-, B_+, B_- as in Figure 2, column 4). The laser light source is a semiconductor laser light source.

This reference has met all the limitations of the claims with the exception that it does not teach explicitly that the diffraction grating patterns are designed to correct the aberrations of the optical elements in the optical pickup device. However designing and recording holographic optical element having diffraction grating to correct aberrations of other optical elements in the device are extremely well known and standard practice in the art to modify the holographic optical element of Takeda et al to also correct the aberrations would have been obvious to one having ordinary skill in the art. With regard to claims 15 and 16, to have each of the hologram patterns to give the same or different aberration is an obvious matter of design choices to one skilled in the art.

With regard to claim 2, Takeda et al teaches that the holographic patterns are aligned with the axis of the light pattern of the laser light.

With regard to claims 3 and 6, Takeda et al teaches that the holographic optical element (22) may comprise relief grating structure that works as a phase grating, with blazed grooves, (please see column 7, lines 20-25, Figures 16a, 16c, 23a and 23b). In general the intensity of light passes through the holographic optical element would be reduced as compared to the original intensity of the light from the laser light source.

With regard to claims 7 and 8, Takeda et al teaches that the hologram patterns may be recorded either at the side facing the light source, (please see Figure 2) or at a side that is opposite to the light source (please see Figures 15, 16a and 16c).

With regard to claims 9 and 10, Takeda et al teaches that the hologram patterns are disposed at interval in a direction parallel to the light source and the virtual light source, (please see Figure 2). Although it does not teach explicitly that the patterns may also be disposed partially overlapped to each other. However since the specification fails to teach the criticality of having this arrangement would

overcome any problem in the prior art such modification is therefore considered as obvious matter of design choice to one skilled in the art.

With regard to claim 11, the feature concerning "curved patters" is not definitely defined for the reasons stated above. It is not clear if such curved patterns is referred to the fringe lines or is referred to the physical shape of the holographic optical element. Such feature therefore can not be addressed here.

10. Claims 4, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Takeda et al as applied to claim 1 above, and further in view of the patent issued to Harris (PN. 5,422,753).

The optical pickup head apparatus taught by Takeda et al as described for claim 1 above has met all the limitations of the claims with the exception that it does not teach explicitly that the non-diffraction light from the light source via the holographic optical element has a uniform intensity. However it is known in the art that a holographic diffraction grating may be designed to modulate the intensity of light beam. Harris teaches a binary diffraction grating having surface relief phase grating structure such that the non-diffraction light portion has a uniform intensity, (please see Figure 2A and column 8, lines 17-26). It would then have been obvious to one skilled in the art to modify the holographic optical element of Takeda et al to have a diffraction grating pattern that makes the non-diffracted light having uniform intensity for the benefit of producing light spot of uniform intensity. With regard to claims 12 and 13, it is implicitly true that the diffraction characteristics depend on the relief grating structure.

11. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Harris (PN. 5,422,753).

Harris teaches a scanning optical device that is comprised of a *single real laser light source* (12), a *binary diffractive structure* (20) that serves as the light forming element and hologram member for

forming a light spot on a *recording medium* (22), (please see Figure 2, columns 5-6). Harris teaches that the binary diffractive structure has a relief phase grating structure such that it provides a uniform intensity for the non-diffracted light that forms the light spot, (please see column 8). This reference has met all the limitations of the claims with the exception that it does teach that the binary diffractive structure is a hologram member. However, hologram member is known in the art to have diffractive structure and it is well known in the art to make diffractive structure holographically, such modification would have been an obvious matter of design choice to one skilled in the art. This reference also does not teach that the device is an optical pickup device. However, this recitation has not been given patentable weight because it has been held that a preamble is denied the effect of limitation where the claim is drawn to a structure and the portion of the claim following the preamble is a self-contained description of the structure not depending for completeness upon the introductory clause. Kropa v. Robie, 88 USPQ 478, (CCPA 1951).

12. Claims 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Fetzer (PN. 4,875,761).

Fetzer teaches a light curtain apparatus that is comprised of a *laser light source* (14) and a plurality of inclined *strip mirrors* (11a to 11c) that serve as the plurality of optical elements arranged in the optical axis (20) wherein each of the strip mirrors partially reflects a potion of light to a deflecting mirror (12a or 12b or 12c) and partially transmits a portion of light to an adjacent strip mirror, (please see Figure 1 and column 3). Fetzer teaches the last strip mirror is a full mirror for fully reflecting the light to the deflecting mirror (12c). This arrangement allows creating a plurality of light beams as from a plurality of virtual light sources. This reference has met all the limitations of the claims with the exception that Fetzer does not teach that the deflecting mirrors (12) are hologram member. However such modification would have been obvious to one skilled in the art since for one thing holographic mirrors, i.e. to make the deflecting mirror a holographic mirror, are very well known in the art and for another it

involves merely rearranging parts to make the light beams illuminate a hologram member. Furthermore, it has been held that a recitation with respect to the manner in which a claimed apparatus intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structure limitations. Ex Parte Masham 2, USPQ2d, 1647 (1987).

13. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Shepherd (PN. 4,929,256).

Shepherd teaches an optical device that is comprised of a *laser light source* (34) and a *mask* (32) having a plurality of collimating apertures to create a plurality of collimating light beams (36), (please see Figure 4, column 3). Although this reference does not teach explicitly that a single collimating lens is used to collimate the light beam from the light source however Shepherd teaches that the light beam from the laser light source is collimated. This means that the light source means (34) comprises a collimating lens. This arrangement provides a plurality of light beams that appears to be generated from a plurality of virtual light sources. This reference has met the limitations of the claim. The preamble of the claim can not be addressed now since the claim fails to give a logical and structural relationship between the preamble and the body of the claims. The scope of the claim is unclear and indefinite and it therefore can not be addressed here.

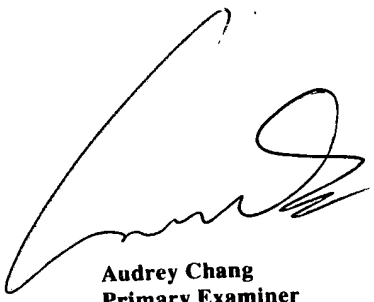
14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 703-305-6208. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on 703-308-1637. The fax phone numbers for the organization where

this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

A. Chang, Ph.D.
August 9, 2001



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